

RECEIVED
CENTRAL FAX CENTER

NOV 02 2006

Serial No. 10:632,311
HP Docket No: 200208136-1

IN THE CLAIMS

1. (Previously amended) A method for dynamically controlling cooling systems in a data center comprising:

- determining a workload within the data center;
- determining an amount of heat being generated as a function of the workload; and
- activating each of a plurality of different types of cooling systems within the data center in an optimal fashion based on the heat being generated.

2. (Previously Amended) The method of claim 1 wherein the optimal fashion is based on a cost associated with the activation of each of the plurality of different cooling systems.

3. (Previously Amended) The method of claim 1 wherein the method further comprises:

- deactivating one or more of the activated plurality of different types of cooling systems within the data center based on a reduction in the amount of power being consumed by the workload.

4. (Original) The method of claim 1 wherein the amount of heat being generated is a function of an amount of power being consumed by the data center.

5. (Previously Amended) The method of claim 4 wherein each of the plurality of cooling systems has a cooling capability wherein the cooling capability is a function of an amount of heat that can be removed by the cooling system and the act of activating each of a plurality of different cooling systems in an optimal fashion further comprises:

- activating each of a plurality of different cooling systems based on the amount of heat that can be removed by each of the plurality of cooling systems.

Serial No.10:632,311
HP Docket No: 200208136-1

6. (Previously Amended) The method of claim 1 wherein the plurality of cooling systems comprises an air-based cooling system, a liquid-based cooling system and a gas-based cooling system.

7. (Previously Amended) The method of claim 6 wherein the act of activating each of a plurality of different cooling systems within the data center in an optimal fashion further comprises:

activating the air-based cooling system before the liquid-based cooling system and the gas-based cooling system; and

activating the liquid-based cooling system before the gas-based cooling system.

8. (Previously Amended) A system for dynamically controlling cooling systems in a data center comprising:

means for determining a workload within the data center;

means for determining an amount of heat being generated as a function of the workload; and

means for activating each of a plurality of different types of cooling systems coupled within the data center in an optimal fashion based on the amount of heat being generated.

9. (Previously Amended) The system of claim 8 wherein the method further comprises:

means for deactivating one or more of the activated plurality of different types of cooling systems within the data center based on a reduction in the amount of heat being generated.

10. (Original) The system of claim 8 wherein the amount of heat being generated is a function of an amount of power being consumed by the data center.

11. (Previously Amended) The system of claim 10 wherein each of the plurality of cooling systems has a cooling capability wherein the cooling capability is a function of

Serial No.10:632,311
HP Docket No: 200208136-1

an amount of heat that can be removed by the cooling system and the means for activating each of a plurality of different cooling systems in an optimal fashion further comprises:

means for activating each of a plurality of different cooling systems based on the amount of heat that can be removed by each of the plurality of cooling systems.

12. (Previously Amended) The system of claim 11 wherein the plurality of cooling systems comprises an air-based cooling system, a liquid-based cooling system and a gas-based cooling system.

13. (Previously Amended) The system of claim 12 wherein the means for activating each of a plurality of different cooling systems within the data center in an optimal fashion further comprises:

means for activating the air based cooling system before the liquid based cooling system and the gas based cooling system; and

means for activating the liquid based cooling system before the gas based cooling system.

14. (Previously Amended) A data center comprising:

a global computer system;

a plurality of different cooling systems coupled to the global computer system; and

a cooling system control module coupled to the global computer system and the plurality of different cooling system wherein the cooling system control module includes logic for:

determining a workload within the global computer system;

determining an amount of heat being generated as a function of the workload; and

activating each of a plurality of different types of cooling systems coupled to the global computer system in an optimal fashion based on the amount of heat being generated.

Serial No.10:632,311
HP Docket No: 200208136-1

15. (Previously Amended) The data center of claim 14 wherein the optimal fashion is based on a cost associated with the activation of each of the plurality of different cooling systems.

16. (Previously Amended) The data center of claim 14 wherein the cooling system control module further comprises logic for:
deactivating one or more of the activated plurality of different types of cooling systems within the data center based on a reduction in the amount of heat being generated.

17. (Original) The data center of claim 14 wherein an amount of heat being dissipated by the global computer system is a function of an amount of power being consumed by the global computer system.

18. (Previously Amended) The data center of claim 17 wherein each of the plurality of cooling systems has a cooling capability wherein the cooling capability is a function of an amount of heat that can be removed by the cooling system and the logic for activating each of a plurality of different cooling systems in an optimal fashion further comprises logic for:
activating each of a plurality of different cooling systems based on the amount of heat that can be removed by each of the plurality of cooling systems.

19. (Previously Amended) The data center of claim 14 wherein the plurality of cooling systems comprises an air-based cooling system, a liquid-based cooling system and a gas-based cooling system.

20. (Previously Amended) The data center of claim 19 wherein the logic for activating each of a plurality of different cooling systems coupled to the global computer system in an optimal fashion further comprises logic for:

Serial No.10:632,311
HP Docket No: 200208136-1

activating the air based cooling system before the liquid based cooling system and the gas based cooling system; and

activating the liquid based cooling system before the gas based cooling system.

21. (Previously Amended) A computer program product for dynamically controlling cooling systems in a global computer system, the computer program product comprising a computer usable medium having computer readable program means for causing a computer to perform the steps of:

determining a workload within the global computer system;

determining an amount of heat being generated as a function of the workload; and

activating each of a plurality of different types of cooling systems coupled to the global computer system in an optimal fashion based on the amount of heat being generated.

22. (Previously Amended) The computer program product of claim 21 wherein the optimal fashion is based on a cost associated with the activation of each of the plurality of different cooling systems.

23. (Previously Amended) The computer program product of claim 21 further comprising means for causing a computer to perform the step of:

deactivating one or more of the activated plurality of different types of cooling systems within the data center based on a reduction in the amount of heat being generated.

24. (Previously Amended) The computer program product of claim 21 wherein the plurality of cooling systems comprises an air-based cooling system, a liquid-based cooling system and a gas-based cooling system.

25. (Currently Amended) The computer program product of claim ~~19~~ 21 wherein the step of activating each of a plurality of different cooling systems coupled to the global

Serial No.10:632,311
HP Docket No: 200208136-1

computer system in an optimal fashion further comprises:

activating the air-based cooling system before the liquid-based cooling system and the gas-based cooling system; and

activating the liquid-based cooling system before the gas-based cooling system.

26. (Previously Amended) A cooling system control module for a data center comprising:

determination logic for:

determining a workload within the data center; and

determining an amount of heat being generated as a function of the workload; and

activation logic for activating each of a plurality of different types of cooling systems within the data center in an optimal fashion based on the amount of heat being generated.

27. (Previously Amended) The cooling system control module of claim 26 further comprising logic for:

deactivating one or more of the activated plurality of different types of cooling systems within the data center based on a reduction in the amount of heat being generated.

28. (Previously Amended) The cooling system control module of claim 26 wherein the plurality of different types of cooling systems comprise an air-based cooling system, a liquid-based cooling system and a gas-based cooling system.

29. (Previously Amended) The cooling system control module of claim 28 wherein the logic for activating each of a plurality of different types of cooling systems within the data center in an optimal fashion further comprises logic for:

activating the air-based cooling system before the liquid-based cooling system and the gas-based cooling system; and

activating the liquid-based cooling system before the gas-based cooling system.

Serial No. 10:632,311
HP Docket No: 200208136-1

x